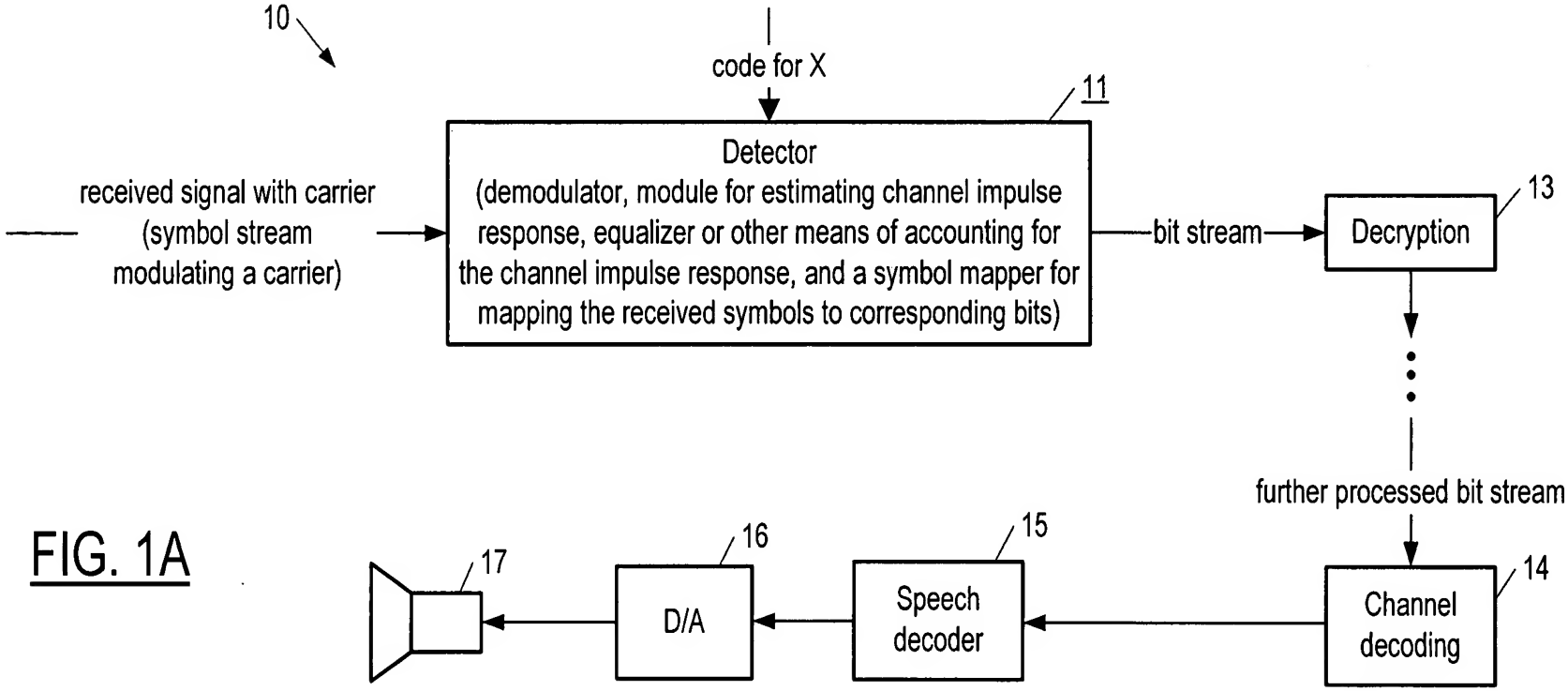

10
code for X
11
Detector
(demodulator, module for estimating channel impulse response, equalizer or other means of accounting for the channel impulse response, and a symbol mapper for mapping the received symbols to corresponding bits)
received signal with carrier
(symbol stream
modulating a carrier)
bit stream
Decryption
13
further processed bit stream
Channel
decoding
14
Speech
decoder
15
D/A
16
17

FIG. 1A

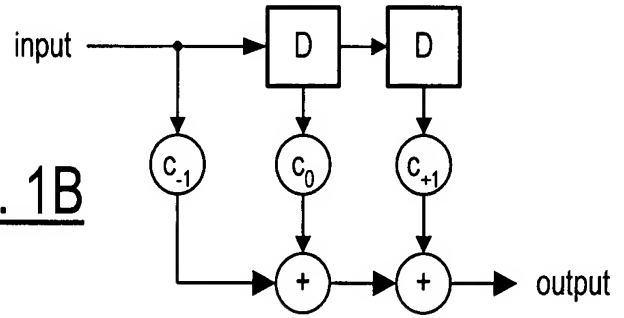

input
D
D
c_{-1}
c_0
c_{+1}
+
+
output

FIG. 1B

FIG 2

(Prior Art)

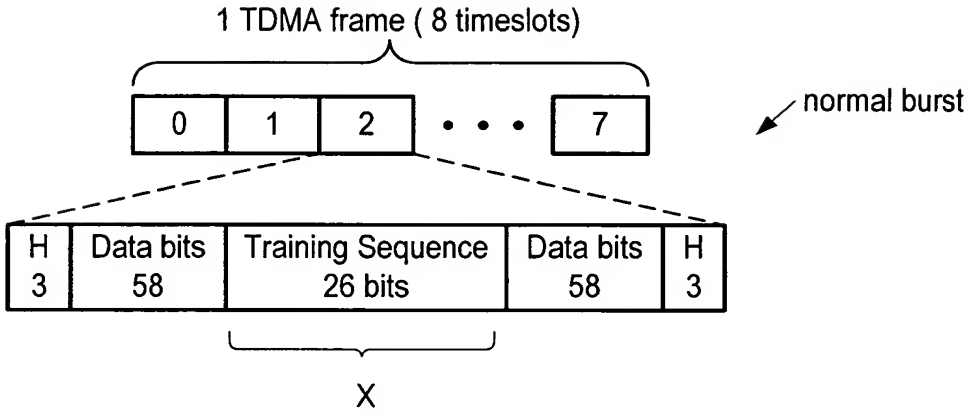


FIG 3

(Prior Art)

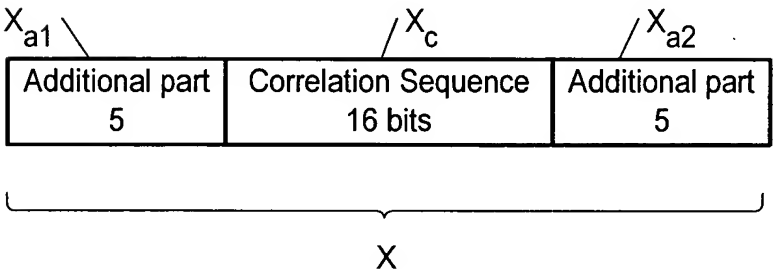


FIG 4

(Prior Art)

training sequence code	bits in training sequence		
	additional part	correlation sequence	additional part
0	0 0 1 0 0	1 0 1 1 1 0 0 0 0 1 0 0 0 1 0 0	1 0 1 1 1
1	0 0 1 0 1	1 0 1 1 1 0 1 1 1 1 0 0 0 1 0 1	1 0 1 1 1
2	0 1 0 0 0	0 1 1 1 0 1 1 1 0 1 0 0 1 0 0 0	0 1 1 1 0
3	0 1 0 0 0	1 1 1 1 0 1 1 0 1 0 0 0 1 0 0 0	1 1 1 1 0
4	0 0 0 1 1	0 1 0 1 1 1 0 0 1 0 0 0 0 0 1 1	1 1 0 1 1
5	0 1 0 0 1	1 1 0 1 0 1 1 0 0 0 0 0 1 0 0 1	1 1 0 1 0
6	1 0 1 0 0	1 1 1 1 1 0 1 1 0 0 0 1 0 1 0 0	1 1 1 1 1
7	1 1 1 0 1	1 1 1 0 0 0 1 0 0 1 0 1 1 1 0 1	1 1 1 0 0

X_{a1} X_c X_{a2}

FIG. 5

(Prior Art)

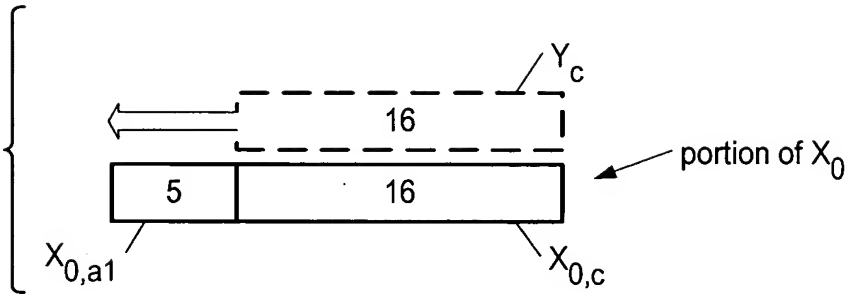


FIG. 6

(Prior Art)

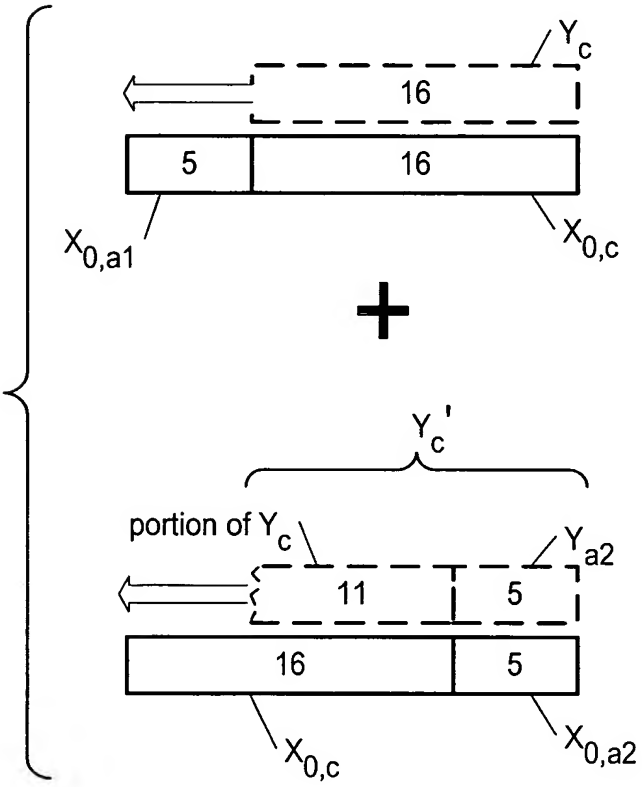


FIG. 7

(Prior Art)

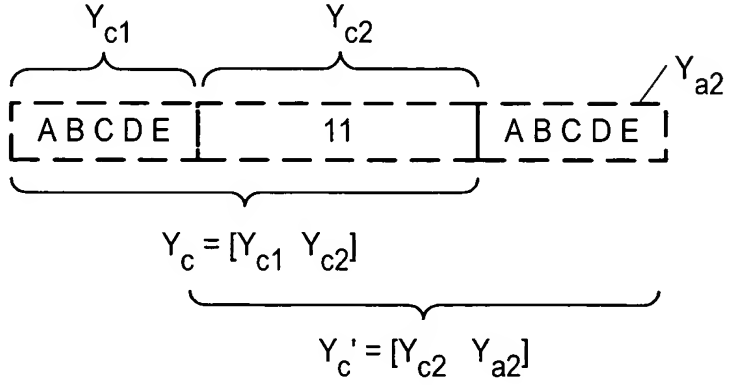


FIG. 8

$$Y_c'' = [(Y_{c1} + Y_{a2}) / 2 \quad Y_{c2}] = [X_{c1}' \quad X_{c2}]$$

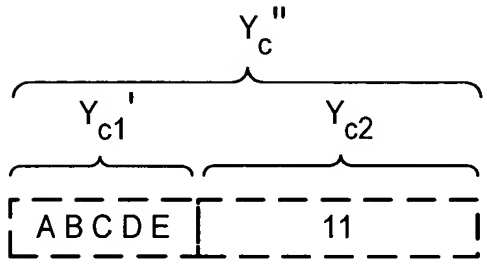
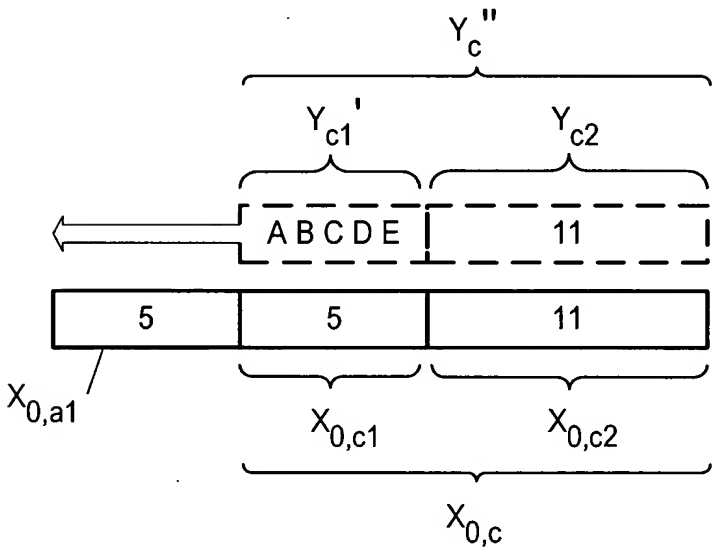


FIG. 9



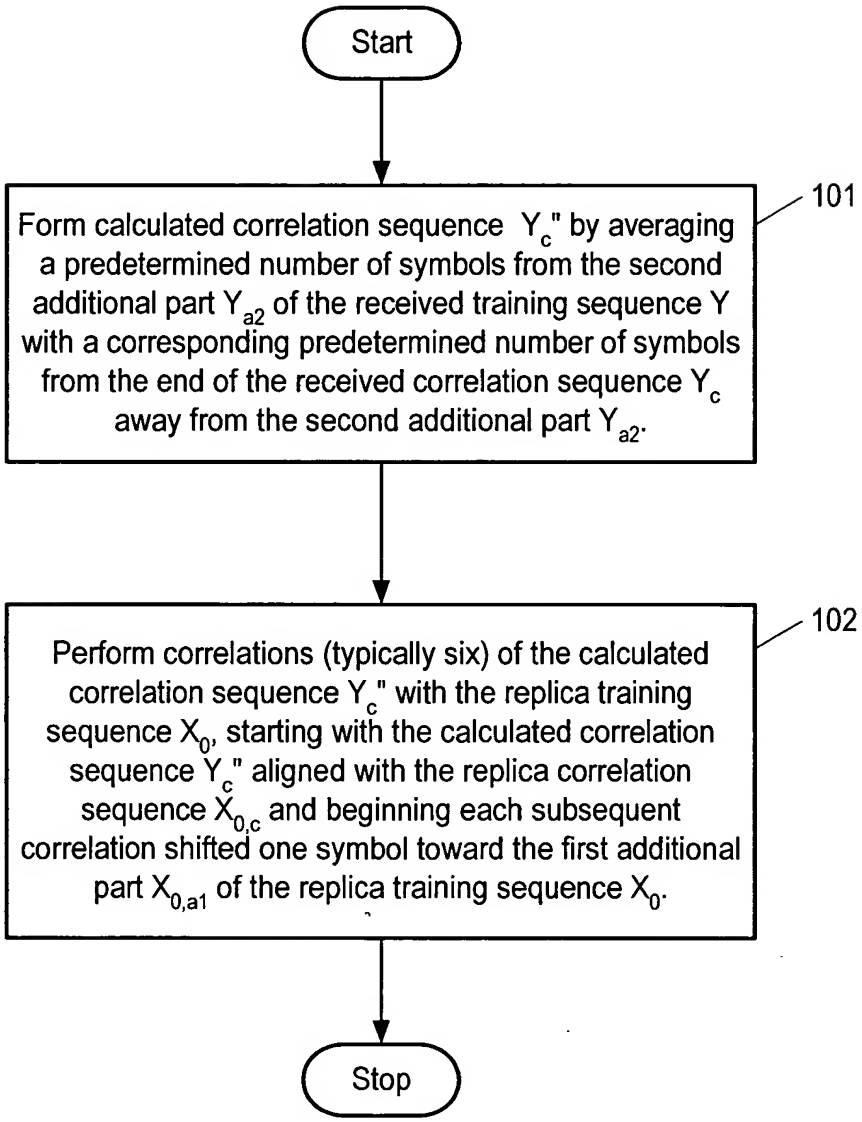

Start
Form calculated correlation sequence Y_c" by averaging a predetermined number of symbols from the second additional part Y_{a2} of the received training sequence Y with a corresponding predetermined number of symbols from the end of the received correlation sequence Y_c away from the second additional part Y_{a2}.
101
Perform correlations (typically six) of the calculated correlation sequence Y_c" with the replica training sequence X_0, starting with the calculated correlation sequence Y_c" aligned with the replica correlation sequence $X_{0,c}$ and beginning each subsequent correlation shifted one symbol toward the first additional part $X_{0,a1}$ of the replica training sequence X_0.
102
Stop

FIG 10